Claims

1. (Currently amended) A multi-function air treatment apparatus, comprising:

a generally enclosed housing in which an interior and a plurality of through openings are defined, at least one of the through openings being an air inlet through which air enters the housing and at least one of the through openings being an air outlet through which air exits the housing;

a negative ion generator positioned within the housing, the negative ion generator having an enclosed charged surface and an opposite ~~exposed~~ outer surface on which negative ions are generated and from which the negative ions are transferred to the air via a negative electrostatic field; and

a photo-ionizing assembly positioned within the housing, the photo-ionizing assembly having a light source that produces light at a desired wavelength to react with airborne matter,

wherein negative ions generated by the negative ion generator interact with and neutralize positively charged airborne particles and the light from the photo-ionizing assembly causes oxidation of at least some of the airborne matter in adjacent air within the housing.

2. (Original) The apparatus of claim 1, wherein the photo-ionizing assembly produces ozone when light from the light source strikes oxygen in the air.

3. (Original) The apparatus of claim 2, wherein the photo-ionizing assembly includes a target catalyst, and wherein some of the light produced by the light source that strikes the target catalyst produces at least one of peroxide radicals and super-oxide ions.

4. (Original) The apparatus of claim 1, further comprising a power supply connected to at least the negative ion generator, the power supply configured to be self-limiting such that power is supplied at a decreasing voltage as the electrostatic field decreases from a positive value to zero.

5. (Withdrawn) An air treatment apparatus, comprising:

a base;

a generally frustoconical housing extending upwardly from the base that terminates in a slanting top surface, the housing having an inner surface that defines an interior and a cross section that decreases in size from a lower end adjacent the base to an upper end adjacent the top surface, the housing also having a side surface with louvered openings including an upper air inlet portion that serves as an air inlet and an adjacent lower air outlet portion that serves as an air outlet, the housing also having additional air outlets defined in the lower end of the housing adjacent the base and in the top surface of the housing;

a negative ion generator positioned within the interior of the housing and coupled to the base, the negative ion generator being a hollow cylinder with dielectric outer side and top surfaces and a conductive inner surface;

a fan positioned within the interior above the negative ion generator, the fan being adjacent the air inlet portion of the side surface of the housing;

a photo-ionizing assembly disposed within the interior and generally above the fan and the negative ion generator, the photo-ionizing assembly including a fluorescent bulb and a tray for supporting the bulb, the tray being slidingly removable through a tray opening defined in the side surface of the housing above the air inlet opening; and

an electrical circuit that provides power to the negative ion generator, fan and photo-ionizer, the circuit including a power switch, a power supply and a ballast, the power supply being connected to the power switch, the fan, the negative ion generator and the ballast, and the ballast also being connected to the photo-ionizer.

6. (Previously presented) The apparatus of claim 1, wherein the enclosed charged surface is formed as a coating.

7. (Previously presented) The apparatus of claim 1, wherein the light source produces ultraviolet light at a predetermined wavelength such that light from the light source striking oxygen in the air causes ozone to form.

8. (Previously presented) The apparatus of claim 1, wherein a portion of the photo-ionizing assembly is coated with a target substance, and the light impinging on the target produces radicals and ions that react with and reduce volatile organic compounds.

9. (Previously presented) The apparatus of claim 8, wherein the target substance comprises at least about 10% TiO_2 by weight.

10. (Previously presented) The apparatus of claim 8, wherein the target substance comprises about 10-30% TiO_2, about 0-30% Ag and about 0-30% Cu, by weight.

11. (Previously presented) The apparatus of claim 1, wherein the opposite exposed surface of the negative ion generator is substantially non-conducting.

12. (Previously presented) The apparatus of claim 1, wherein a top surface of the housing includes a translucent portion, and wherein the light source is positioned within the interior such that light from the light source illuminates the translucent portion when the light source is lit.

13. (Previously presented) The apparatus of claim 1, wherein the housing has a base, further comprising a fan positioned within the interior and a component mount having a central plate and three spaced-apart downwardly extending legs that are coupled to the base at respective positions radially outward of the negative ion generator, the component mount being positioned above and generally in alignment with the negative ion generator with the central plate being adjacent the top surface of the negative ion generator, the central plate having a support member to which the fan and photo-ionizing assembly are coupled.

14. (Previously presented) The apparatus of claim 13, further comprising an electrical circuit that provides electrical power and includes a power switch, a power supply and a ballast wherein the power supply and ballast are coupled to the top plate.

15. (Previously presented) The apparatus of claim 1, wherein the light source is a bulb having two opposing ends and a substantially cylindrical peripheral surface between the two ends, and the photo-ionizing assembly includes a tray having an inner surface with openings that

receive and support the ends of the bulb such that a portion of the peripheral surface between the ends is spaced from the tray.

16. (Previously presented) The apparatus of claim 1, wherein the light source is a bulb having a substantially cylindrical lighting surface and the photo-ionizing assembly includes a tray shaped to receive a portion of light rays emitted radially from the lighting surface.

17. (Original) The apparatus of claim 16, wherein the tray is positioned relative to the bulb such that the inner surface of the tray is radially opposite more than half of the lighting surface.

18. (Original) The apparatus of claim 16, wherein the tray is positioned relative to the bulb such that the inner surface of the tray is radially opposite the lighting surface over substantially an entire length of the lighting surface and more than 180° of a circumference of the lighting surface.

19. (Previously presented) The apparatus of claim 1, wherein the photo-ionizing assembly includes a coil that surrounds a portion of the light source, and the coil is coated with a target substance such that light impinging on the target produces radicals and ions that react with and reduce volatile organic compounds.

20. (Previously presented) The apparatus of claim 1, wherein the power supply is configured to be self-regulating such that the power supplied to the negative ion generator decreases as the electrostatic field decreases from a positive value to zero.

21. (Currently amended) A multi-approach air treatment apparatus, comprising;

a photo-ionizing assembly that emits a predetermined wavelength of ultraviolet light, wherein a first portion of the emitted light produces ozone upon impingement with adjacent air and a second portion of emitted light impinges upon a target that produces radicals and ions that bond with and reduce a portion of volatile organic compounds within the air; and

a negative ion generator that produces negative ions by an electrical charge applied to an enclosed conductive inner surface, the negative ion generator having a substantially non-conductive outer surface on which the negative ions are formed and from which the negative ions are transferred to air,

wherein the photo-ionizing assembly and the negative ion generator are powered by a common power ~~supply operating at a substantially constant voltage~~ source.

22. (Cancelled)

23. (Cancelled)

24. (New) A multi-approach air treatment apparatus, comprising;

a housing that defines an interior area;

a photo-ionizing assembly positioned within the housing that emits a predetermined wavelength of ultraviolet light, wherein a first portion of the emitted light produces ozone upon impingement with adjacent air and a second portion of emitted light impinges upon a target that produces radicals and ions that bond with and reduce a portion of volatile organic compounds within the air;

a negative ion generator positioned within the housing that produces negative ions by an electrical charge applied to an enclosed conductive inner surface, the negative ion generator having a substantially non-conductive outer surface on which the negative ions are formed and from which the negative ions are transferred to the air; and

an air moving device adapted to cause air movement through the housing.

25. (New) The apparatus of claim 24, wherein power is supplied from a common source to power the photo-ionizing assembly, the negative ion generator and the air moving device.